



180



4005/000180  
110/581784  
Rec'd PCT/PTO 19 JUL 2004  
INVESTOR IN PEOPLE

**PRIORITY  
DOCUMENT**  
SUBMITTED OR TRANSMITTED IN  
COMPLIANCE WITH RULE 17.1(a) OR (b)

The Patent Office  
Concept House  
Cardiff Road  
Newport  
South Wales  
NP10 8QQ

REC'D 20 MAR 2003

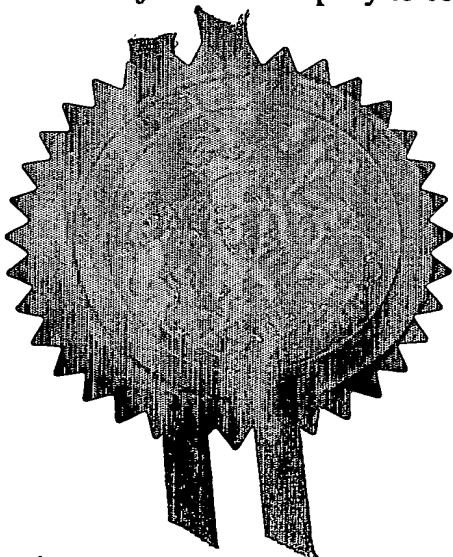
WIPO PCT

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.



Signed

*Stephen Hordley*

Dated 13 March 2003

**Best Available Copy**



21 JAN 02 1689253-1 673228  
0.00-0201197.1

THE PATENT OFFICE  
M  
19 JAN 2002  
NEWPORT

The Patent Office

Cardiff Road  
Newport  
South Wales  
NP10 8QQ

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

1. Your reference

PA / 02.

2. Patent application number

(The Patent Office will fill in this part)

0201197.1

19 JAN 2002

3. Full name, address and postcode of the or of each applicant (underline all surnames)

ARNEG LIMITED  
CALLYWHITE LANE  
DRONFIELD  
DERBYSHIRE  
S18 2XJ

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

6214209002

4. Title of the invention

TILE CUTTING ATTACHMENT

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

YES

**Patents Form 1/77**

Enter the number of sheets of any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description

3 ✓

Claim(s)

Abstract

Drawing(s)

2 only ✓

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

1 ✓

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents  
(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

*D. Robertson*

Date 17/01/01

12. Name and daytime telephone number of person to contact in the United Kingdom

D. ROBERTSON

01246 411 031

**Warning**

*After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.*

**Notes**

- a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
- b) Write your answers in capital letters using black ink or you may type them.
- c) If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- d) If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- e) Once you have filled in the form you must remember to sign and date it.
- f) For details of the fee and ways to pay please contact the Patent Office.

**Patents Form 1/77**

**Best Available Copy**

**Title of the Invention**

Tile Cutting Attachment

**Field of the Invention**

This invention relates to an attachment for a drilling machine, for use in the making of holes in hard composite tiles.

**Background of the Invention**

Many types of rotary glass & tile drills have been suggested in the past and have been in use for many years and find extensive use on building sites and other locations where there has been a necessity to drill tiles of a soft composition. None of which however have been entirely satisfactory for cutting holes in tiles of a hard composition.

While a diamond core drill will, of course, cut through tiles of a hard composition, experience has shown that a water spray must be employed to cool the drill while in operation or the diamonds will be lost. Not only does this necessitate the need for expensive drilling rigs in order to supply the cooling water, but the tiles become saturated with water which tends to make them incompatible with adhesives used to hold the tiles in place.

**Object of the Invention**

A basic object of the present invention is the provision of a tile drilling attachment that will produce holes in tiles of a hard composition. The invention is also designed to minimise the

**Best Available Copy**

chipping of the hard material and particularly the glazed surfaces of the ceramic tile when a hole is being cut without the necessity of a cooling water supply.

### **Summary of the Invention**

According to the present invention, there is provided a tile cutting attachment for the cutting holes in tiles of a hard composition comprising.

- i. A tile drill bit having an active diameter of  $d$ .
- ii. Comprising a shaft (a) and a tip (b) for engaging the workpiece.
- iii. The tip is provided with a plurality of edges.
- iv. Each edge is provided with a clearance angle (c), approx.  $10^{\circ} - 20^{\circ}$ , sufficient to provide a cutting edge to cut the workpiece as the drill bit rotates.
- v. The tip should be provided with a point angle (p) of approx.  $90^{\circ}$ .
- vi. The tip point should be given a relief angle (r) of approx.  $60^{\circ}$ .
- vii. The point angle (p) & relief angle (r) should form a central point on the head of the tip.
- viii. Secondary cutting edges should be provided with an overall angle (s) of approx.  $30^{\circ}$ .
- ix. By virtue of the drill bit tip configuration a tile cutting attachment with improved performance is provided.

### **Advantages of the invention:**

The invention provides an attachment that can produce holes in hard composite tiles, without chipping the material surface and without the need for water-cooling.

**Preferred or optional features of the Invention:**

The cutting tip has a protective, heat resistance coating produced from - TiN

The cutting tip has a protective, heat resistance coating produced from - TiAlCrN

The cutting tip has a protective, heat resistance coating produced from - TiCN

The cutting tip has a protective, heat resistance coating produced from - TiAlN/VN

The cutting tip has a protective, heat resistance coating produced from - Diamond

The cutting tip is manufactured from tungsten carbide

The cutting tip is manufactured from cermet

The cutting tip is manufactured from ceramic.

The tip should be attached to the shaft by means of brazing.

The tip should be attached to the shaft by means of welding.

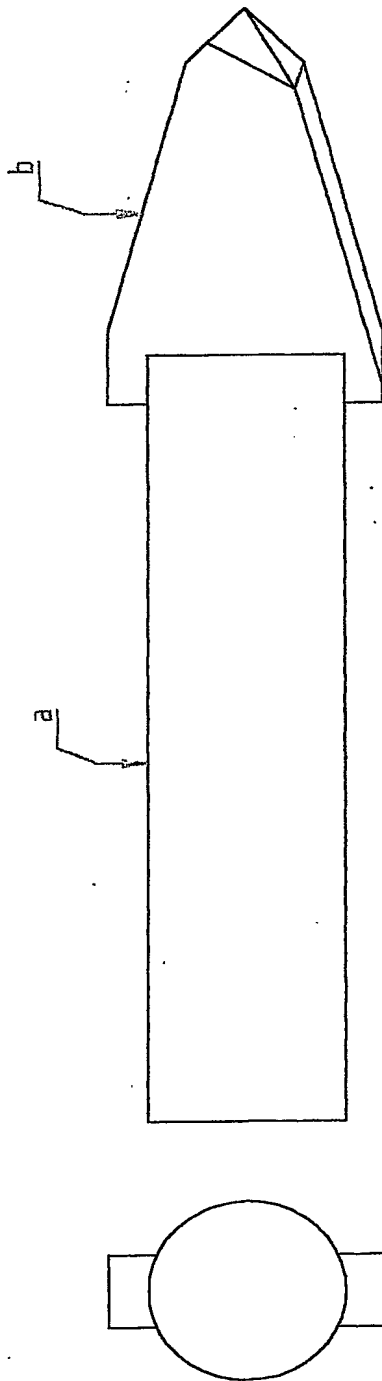
The tip should be provided with 6 cutting edges.

The shaft should be manufactured from Carbon Steel.

The shaft should be manufactured from Alloy Steel.

- One example of a Tile cutting attachment in accordance with the invention is shown in the accompanying drawing.

IF IN DOUBT ASK PROJECTION



ISSUE A 9/01/02 DATE FIRST ISSUE 6 N/A CHECK ENDS APPR ALTERATION

ARMES LIMITED  
CANNONVILLE LANE  
PROOFIELD, N19 2AU

MAIN SECT./SUB SECT.

TITLE

TILE DRILL TIP  
ASSEMBLY

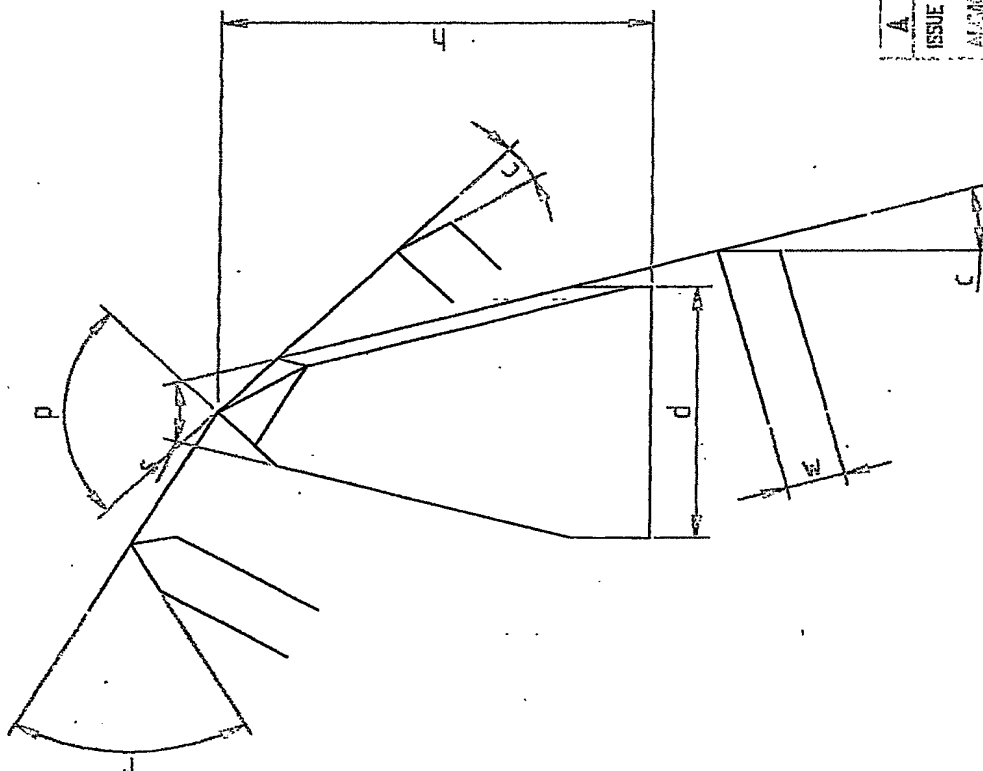
DRG. NO. SKT 011 A

SCALE NTS SHEET SIZE A4

THIS DOCUMENT IS CONFIDENTIAL AND THE COPYRIGHT PROPERTY OF  
ARMES LIMITED, IT MUST NOT BE LOANED, COPIED OR USED  
FOR PURPOSES OTHER THAN THAT FOR WHICH IT WAS SUPPLIED  
WITHOUT WRITTEN APPROVAL OF :  
ARMES LIMITED, CANNONVILLE LANE  
PROOFIELD, N19 2AU

Best Available Copy

## PROJECTION



JE 6  
ALTERATION

ALL INFORMATION CONTAINED  
HEREIN IS UNCLASSIFIED

MAIN SECT./SUB SECT.

DRG. NO. SKT 005

SCALE NTS SHEET A4 SIZE

THIS DOCUMENT IS CONFIDENTIAL AND THE COPYRIGHT PROPERTY OF  
ARMAG LIMITED, IT MUST NOT BE LOANED, COPIED OR USED  
FOR PURPOSES OTHER THAN THAT FOR WHICH IT WAS SUPPLIED  
WITHOUT WRITTEN APPROVAL OF :

[illegible]